

A review of the South African species of Opomyzidae (Diptera: Schizophora), with description of a new species of *Opomyza* Fallén

by

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ABSTRACT

The Southern African fauna of Opomyzidae is reviewed, new material is recorded, and a new species of *Opomyza* Fallén is described from South Africa. The Southern African species of Opomyzidae are: *Opomyza australis* Stuckenberg, 1963; *O. capensis* Stuckenberg, 1963; and *O. milleri* sp. n., all of which are restricted to the southern and western Cape. A key to the species is presented. The distribution of the Opomyzidae in the Afrotropics and Southern Africa is discussed.

INTRODUCTION

The Opomyzidae are a relatively small family of acalyptrate Diptera, with a predominantly holarctic distribution. Although many genera have been referred to the family, only four are now considered to belong there, namely *Anomalochaeta* Frey, *Geomyza* Fallén, *Opomyza* Fallén and *Scelomyza* Séguy (Vockeroth 1987: 882). Larvae are known to feed in grass stems (Vockeroth 1987). In South Africa opomyzids have been collected in a variety of habitats, but are perhaps most frequently encountered in open, grassy areas, often adjacent to rivers or in ditches with grass and sedges (Stuckenberg, *pers. comm.*). Reference should be made to Barraclough (1995) for family identification of Opomyzidae in Southern Africa.

The Southern African Opomyzidae are widely distributed across the southern and western Cape of South Africa (Fig. 1), from about 18°E (the western Cape seaboard) to 26°E (the Fish River) and from 29°S (i.e. extending into the Northern Cape) as far south as 34° (the Plettenberg Bay and Storm's River areas on the southern coast). Most specimens have been taken from altitudes ranging from sea level to 900 m. Opomyzidae appear to be absent from the relatively well-collected Cape Peninsula–Stellenbosch–Paarl area, as well as the entire area between 20° and 22°E, south of 33°30'S. Their distribution is closely associated with the Fold Mountains of the southern and southwestern Cape, as well as the western escarpment of Namaqualand, particularly in mountain passes and upper montane areas where rainfall is relatively high. The region is dominated by the Cape fynbos flora. The flies have not been found in the arid-adapted Succulent Karoo, or in the interior escarpment which is much more arid.

Prior to this paper, the afrotropical fauna of Opomyzidae included only four species: *Geomyza alluaudi* Hendel, 1917 (Tanzania); *Opomyza australis* Stuckenberg, 1963 (South Africa); *O. capensis* Stuckenberg, 1963 (South Africa); and *Scelomyza hirticornis* Séguy, 1938 (Kenya) (see Stuckenberg 1980). Both *G. alluaudi* and *S.*

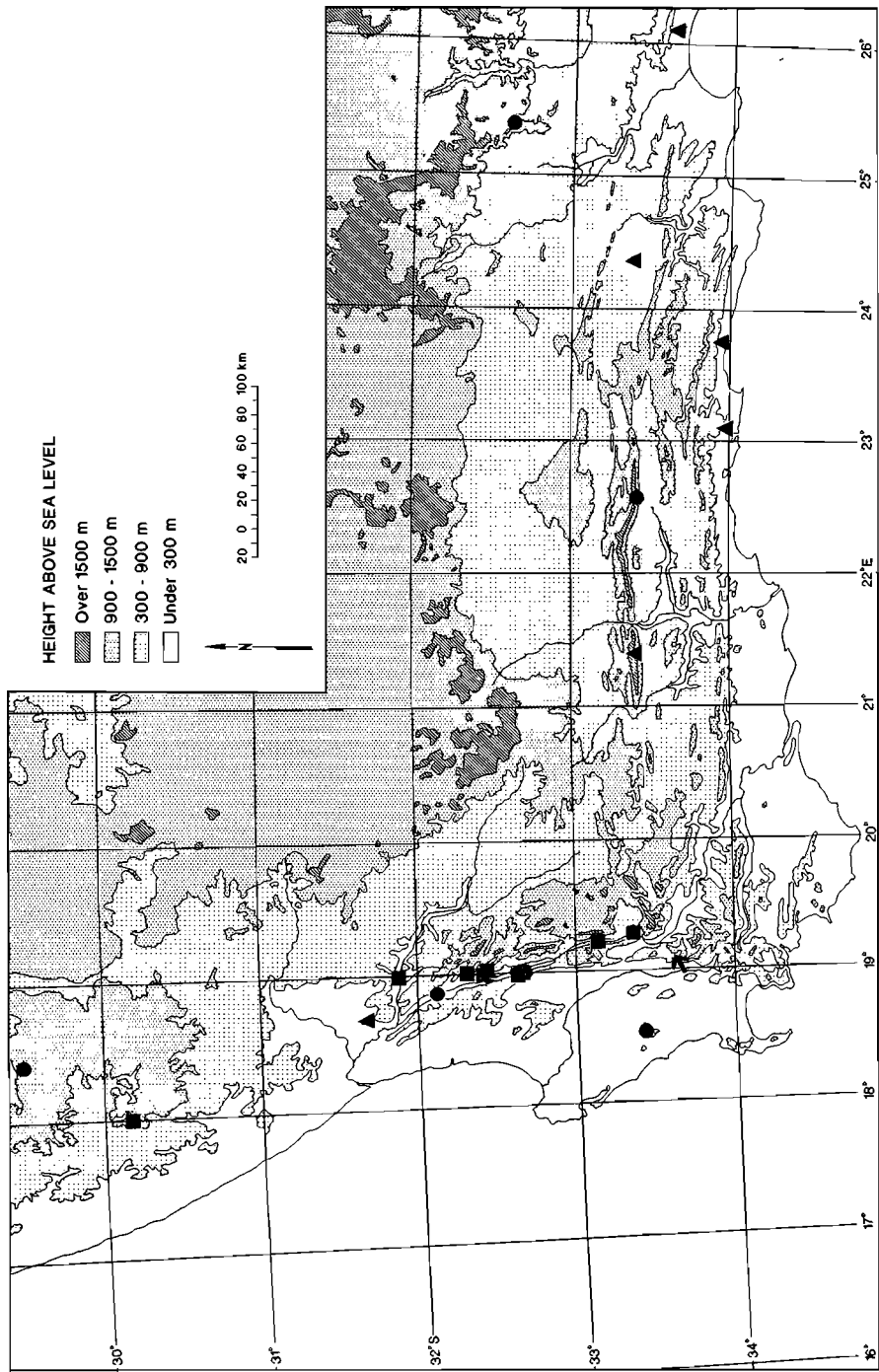


Fig. 1. Map showing distribution of *Opomyza* species in the southern and western Cape, South Africa. [Arrow = *O. australis* Stuckenberg, 1963; Square = *O. capensis* Stuckenberg, 1963; circle = *O. milleri* sp. n.; triangle = Undetermined females].

hirticornis are known only from the East African highlands, and *Opomyza* (including the new species described below) in the afrotropics is restricted to South Africa. Stuckenberg's 1963 assertion that *Opomyza* is a boreal element in the South African fauna is thus confirmed. However, I am aware of no other African *Opomyza* material, and it thus seems likely that the genus does not occur in East Africa. There are no East African Opomyzidae in the BMNH and Tel Aviv University collections. The Campichoetidae and Diastatidae are two other acalyprate families with boreal distributions, but both are represented in East and Southern Africa (Barraclough 1992 1994). There is thus a remarkable disjuncture between the palaeartic fauna of *Opomyza*, with 10 named species (Soós 1984; Carles-Tolrá 1993), and the afrotropical fauna which is restricted mainly to the Western and Eastern Cape Provinces of South Africa. Based on current information, I am aware of no plausible hypothesis to explain this remarkable distribution.

MATERIALS AND METHODS

Specimens of *Opomyza* examined are from the following depositories (acronyms in parentheses):

Museum of Zoology and Entomology, Lund, Sweden (MZLU)

Natal Museum, Pietermaritzburg, South Africa (NMSA)

The Natural History Museum, London (BMNH)

Holotype data are quoted verbatim, with supplementary information in square parentheses; a slash denotes the end of a line of print and a semicolon separates different labels.

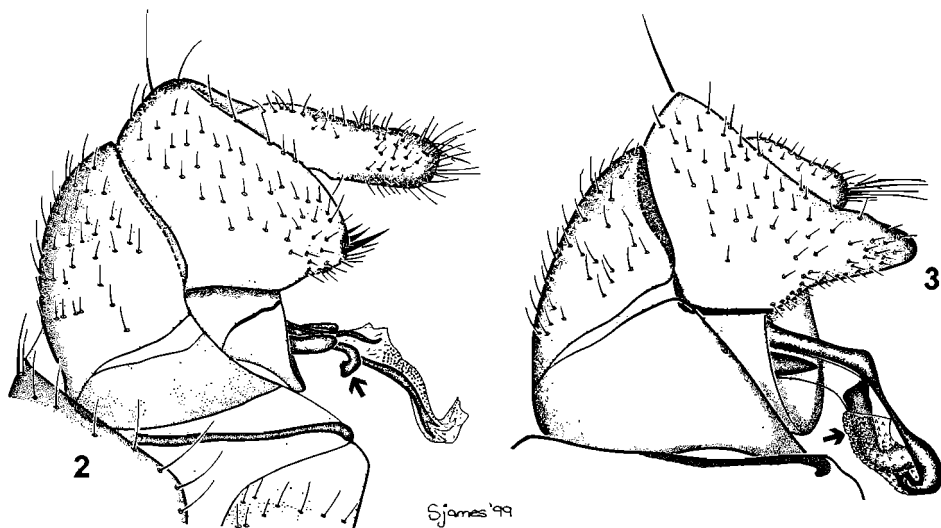
The abdomen was detached near its base, macerated in warm KOH, and then rinsed in alcohol. The dissected male postabdomen and terminalia were positioned in glycerine jelly for drawing, and were stored in glycerine in a microvial pinned beneath each source specimen. Drawings were made with a Wild M5 stereo-microscope with a 2.0 X objective, and a camera lucida.

Bilaterally symmetrical structures are mainly described in the singular. Head/thorax length was measured from the anterior margin of the third antennal segment to the abdominal base. Wing length was measured from the humeral crossvein to the wing tip. The measurements of the holotype are given in brackets after the range for other specimens examined.

Terminology (including the format of the description) concurs partly with Stuckenberg (1963) for ease of comparison. The male terminalia are interpreted as characterised and figured by Vockeroth (1987).

Key to the Southern African species of *Opomyza*

- 1 Face with mesofacial slender along much of height, not broader at buccal margin. Basal scutellar marginal bristles less than half length of apical bristles. Fore femur with 2 pd bristles. Wing with darker clouding restricted to areas around cross-veins **australis** Stuckenberg, 1963
- Face with mesofacial subtriangular, much broader at buccal margin. Basal scutellar marginal bristles at least two-thirds length of apical bristles. Fore



Figs 2–3. Male postabdomen and terminalia of South African *Opomyza* species, profile, showing details of all vestiture. 2. *O. capensis* Stuckenberg, 1963. 3. *O. milleri* sp. n. [Distiphallus with lateral appendage arrowed.]

femur with 5 or more pd bristles. Wing with darker clouding around cross-veins, around parts of R_{4+5} distad to r-m, and around apical parts of R_{2+3} and M_1 2

- 2 Male terminalia (Fig. 2): epandrium with surstylic lobe not or weakly differentiated, but dorso-apical extremity with 2–5 well-developed, stubby, dagger-like bristles. Cerci elongate and relatively broad, about four-fifths total length of epandrium/surstylus complex, much of length conspicuously visible in profile above epandrium. Paramere with rounded, finger-like distal region. Aedeagus with basiphallus slender in dorsal view; distiphallus with short, lateral appendages, these inconspicuous in profile (arrowed).....

capensis Stuckenberg, 1963

- Male terminalia (Fig. 3): epandrium with conspicuous surstylic lobe, this relatively slender and acutely rounded apically, but without any dagger-like apical bristles. Cerci short and slender, about two-fifths total length of epandrium/surstylus complex, slightly exposed above dorsal margin of epandrium in profile. Paramere with tapering, sharply hooked apical region. Aedeagus with basiphallus broad in dorsal view; distiphallus with elongate lateral appendages, these conspicuous in profile (arrowed)

milleri sp. n.

Opomyza australis Stuckenberg, 1963

Opomyza australis Stuckenberg, 1963: 181; 1980: 635.

Type material examined: SOUTH AFRICA: Holotype ♀: **Western Cape:** 'Bainskloof / Wellington Dist / c. 2000ft / W Cape / 4–5 Oct 1959 / B & P

Stuckenberg' [text in caps]; 'HOLOTYPE / *Opomyza / australis* / Stuckenberg' [text in caps; black ink on red card]. In good condition. In NMSA.

Discussion: No additional material of this highly distinctive species has been discovered. Reference should be made to Stuckenberg's original description.

Opomyza capensis Stuckenberg, 1963

Fig. 2

Opomyza capensis Stuckenberg, 1963: 179; 1980: 635.

Type material examined: SOUTH AFRICA: Holotype ♂, Paratype ♀ : **Western Cape**: Clanwilliam Rd, N of Gydo Pass, Ceres Dist, 1.x.1959, B. & P. Stuckenberg (NMSA).

Additional material examined: SOUTH AFRICA: **Western Cape**: 3♂8♀, Ceres, iv.1923, iii.1925, iv.1925, R. E. Turner (BMNH); 4♂4♀, 32 km NE Clanwilliam, Brandewyn R., 3219AA, 2–3.x.1977, R. M. Miller (NMSA); 2♂1♀, 16.5 km NE Clanwilliam, Rheebooksley picnic area, 3218BB, 4.x.1977, R. M. Miller, 350 m (NMSA); 1♂1♀, Hexrivier, N of Citrusdal, 32°26'S:18°58'E, 6.x.1994, loc. 8, R. Danielsson (MZLU); 1♂, 10 km E Kamieskroon, 3018AA, 17.x.1977, Ray M. Miller, 630 m (NMSA); 6♂7♀, Koomplanskloof, 10 km S Citrusdal, 32°40'S:19°01'E, 4–8.x.1994, Danielsson, 200–270 m (MZLU); 3♂, Patrysberg, N of Citrusdal, 32°27'S:18°58'E, 6.x.1994, R. Danielsson (MZLU); 4♀1?, Piekenierskloof, 15 km S Citrusdal, 32°38'S:18°57'E, 4.x.1994, R. Danielsson, 370 m (MZLU).

Discussion: Reference should be made to the original description of Stuckenberg (1963: 179), although examination of additional material shows there is marked intraspecific variation in colouring and pollinosity (see above). The thorax, particularly the pleuron, varies from being mostly yellow-brown to mostly dark brown; the legs are variably coloured, although usually pale, the femora (particularly the fore femur) sometimes being darker. The wing clouding along R_{4+5} (distad to r-m) is usually as described by Stuckenberg, but there may be a 3–4 rounded areas of clouding similar to *O. milleri*, along the basal half to two-thirds of the vein, although occasionally two of these may be fused. When the ground colour of the thorax is pale, the clouding of the wing is paler and more restricted.

Opomyza capensis is by far the most commonly encountered species of Opomyzidae in Africa, there being more than forty known specimens, although all are from the Western Cape. All the more recently collected material has been taken in early spring, from early September to early October.

Male postabdomen (Fig. 2): Epandrium profile shape as in Fig. 2; setulae scattered sparsely over dorsal four-fifths, but with a conspicuous, well-developed, posterodorsally directed pair; surstylic lobe not differentiated, but dorso-apical extremity with hairing clustered and 2–5 well-developed, albeit short, dagger-like bristles, which are mostly anterodorsally directed in profile. Cerci elongate and relatively broad, about four-fifths total length of epandrium/surstylus complex, cercus smoothly rounded apically in profile (appearing thumb-like), and virtually entire extent upwardly directed and exposed above dorsal margin of epandrium, basal half

mostly membranous although with serial setulae along dorsal margin, apical sclerotised half with vestiture distributed over apical four-fifths and setulae clustered, elongate and upwardly directed apically. Parameres bare, broad basally and tapering to smoothly rounded distal region, not converging towards each other at mid-length. Aedeagus with basiphallus slender in dorsal view; distiphallus with short, stubby lateral appendages, these inconspicuous in profile.

***Opomyza milleri* sp. n.**

Fig. 3

Etymology: Named for Dr R. M. Miller, collector of most of the type series.

Type material: Holotype ♂: **SOUTH AFRICA: Western Cape:** 'S AFRICA : Cape #15 / 12 km N of De Rust / 33°25'S:22°34'E 900m / Date: 23.xi.1990 / Whittington & Londt / Meiringspoort area'; 'HOLOTYPE ♂ / *Opomyza milleri* / Barraclough, 1999 [rectangular card, red perimeter]. In good condition (abdomen detached, terminalia dissected). In NMSA. Paratypes: **SOUTH AFRICA: Eastern Cape:** 2♂1♀, Klein Vis Riv., 3225CB, 32 km NW Somerset East, 28.x.1978, R. Miller & J. Londt, river banks (NMSA). **Northern Cape:** 1♂, 42 km NE Garies, nr Wolfhok, 3018AC, 15.x.1977, R. M. Miller, 700 m (NMSA). **Western Cape:** 1♂2♀, 12 km SW Clanwilliam, Kransvlei R., 3218BB, 5.x.1977, R. M. Miller (NMSA); 1♂1♀, 15 km E Darling, 33°26'S:18°32'E, 4.x.1994, R. Danielsson, 150 m (MZLU).

Dimensions (in mm): Head/thorax length 1.9–2.3 (2.0); wing length 2.8–3.1 (2.8).

Head: Profile similar to *O. capensis*, depth of cheek in profile slightly more than length of third antennal segment. Frons mostly pale yellow to yellow-brown, but ocellar triangle sometimes darker brown and area around ocelli somewhat blackish. Vertex plates sometimes conspicuously silver pollinose, with apices tapering and terminating half to three-quarters distance between vertex and antennal bases, mesofrons therefore appearing more-or-less V-shaped. Frontal vitta and a strip on either side of vertex plates without pollinosity and with small hairs. Orbital plate sparsely silver pollinose, pollinosity mostly absent medially on anterior two-thirds (sometimes pollinosity barely evident on most of plate). Occiput narrowly yellow-brown below vertex (more extensive medially and often laterally below vertical bristles) and adjacent to eye margins, otherwise dark brown on upper half to three-quarters, with moderate to profuse silver to yellowish pollinosity; a small dark yellow-brown rectangular area above neck, bearing short black setulae; lower part of occiput entirely yellow-brown and without noticeable pollinosity. Cheek, parafacial and face entirely dark cream to yellow-brown; pollinosity silver and profuse on face, facial ridge and particularly on parafacial extending to lower margin of eye. First and second antennal segments yellow-brown, third segment darker brown on apical two-thirds (sometimes slightly so); arista entirely dark brown.

Thorax: Mesonotum in dorsal view often with distinctive pattern: a very narrow, usually dark brown median vitta extends from anterior margin to scuto-scutellar suture, area adjacent to vitta often with darker ground colour apparent; scutellum with dark or partially dark disc and extensive yellow-brown margins, virtually lacking pollinosity or sparse silver pollinosity evident; dorsocentral bristles bounded

by broad yellow-brown to brown area with extensive, shifting, silver or yellow or golden-brown pollinosity; a dark brown vitta (sometimes interrupted) extends from region of posterior margin of humeral callus to near lateral corner of scutellum and is variably covered with silver or yellow or golden pollinosity; notopleuron yellow-brown, often with silver or golden pollinosity; humeral callus yellow-brown to brown, dorsally sometimes with silver or golden pollinosity. Pleuron irregularly coloured, mainly yellow-brown, but often upper sternopleuron and entire or parts of posterior section of pleuron dark brown, and upper mesopleuron and pteropleuron also sometimes darker; pollinosity irregularly developed, mostly silver except usually inconspicuously brown posteriorly.

Chaetotaxy: Fore femur with 5–7 pd bristles. Male without pv bristles on mid tibia. Pteropleuron with 2–3 setulae, largest setula posteriorly directed. Mesopleuron and sternopleuron with numerous hairs on posterior parts.

Legs: Almost entirely pale yellow-brown, but mid and hind coxae sometimes inconspicuously tinged with brick-red; pollinosity silver and present only on coxae, most profuse on fore coxa.

Wing: Appearing silvery-grey tinged; dark brown clouding around both cross-veins and at base of R_{4+5} , paler brown clouding on either side of apical third to half of M_1 and on either side of apical one- to two-fifths of R_{2+3} (not extending anteriorly to costal margin); R_{4+5} with small, rounded apical clouding and some 4–5 similar areas beyond r-m crossvein (2 sometimes fused). Haltere very pale yellow, although white apically.

Abdomen: Tergites irregularly coloured, yellow-brown to dark brown, but usually mostly dark brown with paler ground colour on posterior section of each tergite, and particularly on terminal few tergites which may be entirely pale; pollinosity barely evident, indistinctly silver. Terminalia mostly yellow-brown. Sternites entirely yellow brown, without pollinosity.

Male postabdomen (Fig. 3): Epandrium profile shape as in Fig. 3; setulae scattered sparsely over dorsal two-thirds to three-quarters, but with a conspicuous, well-developed, posterodorsally directed pair; conspicuous, surstylic lobe present, this somewhat thumb-shaped, but sometimes more slender and acutely rounded apically, without any apical setae or setulae. Cerci short and slender, about two-fifths total length of epandrium/surstylus complex, cercus bluntly terminated apically in dorsal view, but slightly upturned in profile and narrowly exposed above dorsal margin of epandrium, apical region with series of dorsally directed, elongate setulae. Parameres bare, talon-shaped, converging towards each other at mid-length, but with sharp apical region of each outwardly directed. Aedeagus with basiphallus broad in dorsal view; distiphallus with elongate lateral appendages, these conspicuous in profile.

Undetermined *Opomyza* ♀♀

Discussion: As *O. capensis* and *O. milleri* can only be reliably distinguished using characters of the male terminalia, the following unassociated females must be left unidentified.

Material examined: SOUTH AFRICA: Paratypes (*O. capensis*): **Eastern Cape**: 1 ♀, Storms River Pass, Tsitsikama Range, 12–13.x.1959, B. & P. Stuckenberg,

indigenous forest (NMSA). **Western Cape:** 1 ♀, Blauuwkrantz Pass, nr Plettenberg Bay, 11.x.1959, B. & P. Stuckenberg, indigenous forest (NMSA); 1 ♀, Sewe[n]weekspoort, Laingsburg Dist, 19–22.ix.1959, B. & P. Stuckenberg (NMSA). Other material: **Eastern Cape:** 1 ♀, 15 km W Alexandria, 3326CA, 3.xi.1978, J. Londt & R. Miller, hillside vegetation (NMSA); 1 ♀, Tsitsikama N.P., Stormsriver Pass, 33°59'S:18°32'E, 19.x.1994, R. Danielsson (MZLU); 1 ♀, 9 km SW Willowmore, 3324AD, 30–31.x.1978, J. Londt & R. Miller, open Karoo scrub (NMSA). **Western Cape:** 2 ♀, 10 km SE Vanrhynsdorp, 3118DA, 14.x.1977, R. M. Miller along river (NMSA).

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REFERENCES

- BARRACLOUGH, D. A. 1992. A synopsis of the Afrotropical Diastatidae (Diptera), with the description of five new species from southern and East Africa and first record of the Campichoetinae. *Annals of the Natal Museum* **33** (1): 13–36.
- 1994. First record of Diastatidae (Diptera: Schizophora) from East Africa, with descriptions of two new species. *African Entomology* **2** (2): 111–116.
- 1995. An illustrated identification key to the acalyptrate fly families (Diptera: Schizophora) in southern Africa. *Annals of the Natal Museum* **36**: 97–133.
- CARLES-TOLRA, M. 1993. Three new species of Opomyzidae (Diptera) from Spain. *Entomologicheskoe Obozrenie* **72** (2): 410–413.
- SOOS, Á. 1984. Family Opomyzidae. In: Soós, Á & Papp, L., eds, *Catalogue of Palaearctic Diptera, Volume 10, Clusiidae–Chloropidae*. Budapest: Akadémiai pp. 53–56.
- STUCKENBERG, B. R. 1963. Two new species of *Opomyza* from South Africa (Diptera: Opomyzidae). *Proceedings of the Royal Entomological Society of London* (B) **32** (11–12): 178–182.
- 1980. Family Opomyzidae. In: Crosskey, R. W., ed., *Catalogue of the Diptera of the Afrotropical Region*. London: British Museum (Natural History) p. 635.
- Vockeroth, J. R. 1987. Opomyzidae. In: McAlpine, J. F. et al., eds, *Manual of Nearctic Diptera*. Vol. 2. Ottawa: Agriculture Canada, Research Branch. (Monograph; No. 28) pp. 881–885.